

Abstract Submitted
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Simulation experiment of interaction of plasma facing materials and transient heat loads in ITER divertor by use of magnetized coaxial plasma gun M. NAKATSUKA, K. ANDO, T. HIGASHI, Y. KIKUCHI, N. FUKUMOTO, M. NAGATA, University of Hyogo — Interaction of plasma facing materials and transient head loads such as type I ELMs is one of the critical issues in ITER divertor. The heat load to the ITER divertor during type I ELMs is estimated to be 0.5-3 MJ/m² with a pulse length of 0.1-0.5 ms. We have developed a magnetized coaxial plasma gun (MCPG) for the simulation experiment of transient heat load during type I ELMs in ITER divertor. The MCPG has inner and outer electrodes made of stainless steel 304. In addition, the inner electrode is covered with molybdenum so as to suppress the release of impurities from the electrode during the discharge. The diameters of inner and outer electrodes are 0.06 m and 0.14 m, respectively. The power supply for the MCPG is a capacitor bank (7 kV, 1 mF, 25 kJ). The plasma velocity estimated by the time of flight measurement of the magnetic fields was about 50 km/s, corresponding to the ion energy of 15 eV (H) or 30 eV (D). The absorbed energy density of the plasma stream was measured a calorimeter made of graphite. It was found that the absorbed energy density was 0.9 MJ/m² with a pulse width of 0.5 ms at the distance of 100 mm from the inner electrode. In the conference, experimental results of plasma exposure on the plasma facing materials in ITER divertor will be shown.

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